Al cont'd

32. The transgenic rat of claim 28, wherein the rat is homozygous for human CD4.

33. The transgenic rat of claim 28, wherein the rat is homozygous for a human chemokine receptor.

34. The transgenic rat of claim 28, wherein the chemokine receptor is selected from the group consisting of: CCR3, CCR5, CCR2B, CXCR4, CXR3, CCR8, GPR15, STRL33, APJ, and $LTB_4$.

35. The transgenic rat of claim 34, wherein the chemokine receptor is CCR5.

36. The transgenic rat of claim 29, wherein the chemokine receptor is CCR5.

37. The transgenic rat of claim 30, wherein the chemokine receptor is CCR5.

38. An isolated cell derived from the rat of Claim 28, wherein said isolated cell expresses said transgenes.

39. The transgenic rat of claim 34, wherein the third transgene encodes a subunit of human elongation factor P-TEFb.

40. The transgenic rat of claim 34, wherein the third transgene encodes Cyclin T.

41. A method for screening for biologically active agents that modulate HIV adhesion and/or infection, the method comprising:

combining a candidate agent with a transgenic rat having a genome comprising an exogenous and stably transmitted transgene encoding a human CD4, an exogenous and stably transmitted transgene encoding a human chemokine receptor and a third stably integrated transgenic nucleotide sequence encoding a polypeptide that interacts with an HIV sequence, wherein the first, second and third

transgenes are operably linked to a promoter to be preferentially expressed in T-cells and/or macrophages which results in HIV adhesion and/or infection of cells expressing said transgenes in said transgenic rat; and

determining the effect of said agent on HIV infection of said transgenic rat.

42. The method of claim 41, wherein the third transgene encodes a subunit of human elongation factor P-TEFb.

43. The method of claim 41, wherein the third transgene encodes Cyclin T.

44. The method of claim 41, wherein HIV infection is determined by measuring at least one associated HIV phenomena selected from the group consisting of: viral adhesion to cells, viral integration, viral replication and T-cell depletion.

45. A method of screening for biologically active agents that modulate HIV adhesion and/or infection, the method comprising:

combining a candidate agent with a transgenic rat cell culture, said cells in culture comprising an exogenous and stably transmitted transgene encoding a human CD4, an exogenous and stably transmitted transgene encoding a human chemokine receptor and an exogenous and stably transmitted transgene encoding a polypeptide that interacts with a HIV sequence, wherein the first, second and third transgenes are operably linked to a promoter to be preferentially expressed in T-cells and/or macrophages; and

determining the effect of said agent on HIV infection of said rat cell culture.

46. A method of assessing the infectivity of an HIV isolate comprising:

inoculating a first transgenic rat with an HIV isolate;

inoculating a second transgenic rat with a representative HIV isolate,

wherein both transgenic rats have a genome comprising an exogenous and stably transmitted first transgene encoding a human CD4, a second exogenous and stably transmitted transgene encoding a

human chemokine receptor and a third exogenous and stably transmitted transgene encoding a polypeptide that interact with a HIV sequence, wherein the first, second third transgenes are operably linked to a promoter to be preferentially expressed in T-cells and/or macrophages such that cells expressing said transgenes are infected by HIV; and

comparing the HIV isolate infectivity of the first transgenic rat to the representative HIV infectivity of the second transgenic rat.

47. The method of claim 46, wherein the HIV isolate is a strain of HIV-1.

48. A method for testing the activity of selected HIV sequences, comprising:

providing a transgenic rat having a genome comprising a first exogenous and stably transmitted transgene encoding a human CD4, a second exogenous and stably transmitted transgene encoding a human chemokine receptor and a third exogenous and stably transmitted transgene encoding a polypeptide that interacts with a HIV sequence, wherein the first, second and third transgenes are operably linked to a promoter to be preferentially expressed in T-cells and/or macrophages such that cells expressing said transgenes can be infected by HIV;

infecting the rat with a virus, said virus comprising selected HIV sequences and sequences from a non-HIV virus; and

determining the effect of the selected HIV sequences on infection of the transgenic rat by said virus.

49. The method of claim 48, further comprising:

administering to the infected transgenic rat a candidate agent; and

determining the effect of the candidate agent on HIV adhesion and/or infection of the infected transgenic rat.

50. The transgenic rat of claim 29, wherein the chemokine receptor is CXCR4.

51. The transgenic rat of claim 30, wherein the chemokine receptor is CXCR4.

52. An isolated rat cell of claim 38, wherein second stably integrated nucleotide sequence encodes a human CCR5 chemokine receptor.

53. An isolated rat cell of claim 38, wherein second stably integrated nucleotide sequence encodes a human CXCR4 chemokine receptor.

54. A method of producing a transgenic rat, comprising:

transforming a cell comprising a vector, the vector comprising a first transgene encoding a human CD4, a second transgene encoding a human chemokine receptor and a third transgene encoding a polypeptide that interacts with a HIV sequence, wherein the first, second and third transgenes are operably linked to a promoter;

introducing the transformed cell into a blastocoel of a blastocyst;

positioning the modified blastocyst into a uterine horn of a pesudopregnant female rodent; and

allowing the female rodent to go to term, wherein offspring of the female rodent are screened for having the three transgenes.

55. A method of claim 54, wherein the second transgene encoding a human chemokine receptor is CCR5 and the third transgene is Cyclin T.

No new matter is introduced by these amendments.